

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended): An imaging optical system for imaging on a predetermined surface information in a region having a length (A) in a long side direction and a length (B) in a short side direction which satisfy a relation of $A/B > 10$, comprising:

a diaphragm;

a first set of a plurality of curved off-axial reflection surfaces arranged on an object surface side from the diaphragm; and

a second set of a plurality of curved off-axial reflection surfaces arranged on an image surface side from the diaphragm,

wherein an optical path of a light beam passing through a center of the diaphragm and a center of an image obtained through the imaging is deflected by the off-axial reflection surfaces within a surface substantially perpendicular to the long side direction of the object region to undergo crossing at least once,

wherein all of the off-axial reflection surfaces satisfy a conditional expression:

$|P|S < 0.5$

where P (mm^{-1}) represents an optical power of the off-axial reflection surface within the surface perpendicular to the long side direction and S (mm) represents a distance from the off-axial reflection surface to a subsequent one of the off-axial reflection surfaces along a reference axis.

Claim 2 (original): An imaging optical system according to claim 1,
wherein the crossing of the optical path is caused on the object surface side from the
diaphragm.

Claim 3 (canceled):

Claim 4 (currently amended): An imaging optical system according to claim 1 for
imaging on a predetermined surface information in a region having a length (A) in a long side
direction and a length (B) in a short side direction which satisfy a relation of A/B > 10,
comprising:

a diaphragm;

a first set of a plurality of off-axial reflection surfaces arranged on an object surface side
from the diaphragm; and

a second set of a plurality of off-axial reflection surfaces arranged on an image surface
side from the diaphragm,

wherein an optical path of a light beam passing through a center of said diaphragm and a
center of an image obtained through the imaging is deflected by said off-axial reflection surfaces
within a surface perpendicular to said long side direction of said object region to undergo
crossing at least once, and,

wherein the number (X) of off-axial reflection surfaces included in the first set of the
plurality of curved off-axial reflection surfaces and the number (Y) of off-axial reflection
surfaces included in the second set of the plurality of curved off-axial reflection surfaces satisfy a
relation:

$$0.65 < X/Y < 1.6.$$

Claim 5 (original): An imaging optical system according to claim 1,
wherein the crossing of the optical path is caused on both the object surface side and the
image surface side from the diaphragm.

Claim 6 (original): An imaging optical system according to claim 1,
wherein optical powers applied by the reflection surfaces of the imaging optical system to
the long side direction of the imaged region are all positive.

Claim 7 (original): An imaging optical system according to claim 1,
wherein an intermediate image is not formed in the optical path.

Claim 8 (previously presented): An image reading apparatus comprising:
the imaging optical system according to claim 1; and
a line sensor arranged substantially in an image surface position of the imaging optical
system and adapted to convert a formed image to an electrical signal.

Claim 9 (previously presented): An image reading apparatus comprising:
the imaging optical system according to claim 2; and
a line sensor arranged substantially in an image surface position of the imaging optical
system and adapted to convert a formed image to an electrical signal.

Claim 10 (canceled):

Claim 11 (previously presented): An image reading apparatus comprising:
the imaging optical system according to claim 4; and

a line sensor arranged substantially in an image surface position of the imaging optical system and adapted to convert a formed image to an electrical signal.

Claim 12 (previously presented): An image reading apparatus comprising:
the imaging optical system according to claim 5; and
a line sensor arranged substantially in an image surface position of the imaging optical system and adapted to convert a formed image to an electrical signal.

Claim 13 (previously presented): An image reading apparatus comprising:
the imaging optical system according to claim 6; and
a line sensor arranged substantially in an image surface position of the imaging optical system and adapted to convert a formed image to an electrical signal.

Claim 14 (previously presented): An image reading apparatus comprising:
the imaging optical system according to claim 7; and
a line sensor arranged substantially in an image surface position of the imaging optical system and adapted to convert a formed image to an electrical signal.